

## **REMARKS**

The above referenced patent application has been reviewed in light of the Office Action, dated January 26, 2009, in which:

- the drawings, Figures 1- 3, are objected to as not complying with MPEP § 608.02(g);
- claims 22-32 are rejected under 35 U.S.C. § 101 as not falling within one of the four statutory categories of invention;
- claims 1-3, 7, 9, 10, 22, 23, 33, 34, and 40 are rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Moriuchi (US Patent No. 6,556,637);
- claims 12, 14 are rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Moriuchi in view of Mann *et al.* (hereafter, 'Mann,' US Patent No. 5,684,434);
- claims 16 and 17 are rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Moriuchi and Mann in further view Cao (US Publication No. 2001/0033407);
- claims 4, 24, and 36 are rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Moriuchi in view of Cao;
- claim 5, 6, and 13 are rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Moriuchi, and Mann and in further view of Cao;
- claims 11 and 25 are rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Moriuchi in view of Shimizu *et al.* (hereafter, "Shimizu"; US Patent No. 4,469,438);
- claim 15 is rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Moriuchi and Mann in further view of Shimizu;

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- claim 18 is rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Moriuchi, Cao, and Mann in further view of Shimizu;
  - and claims 8, 19-21, 37-39, and 41-47 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form.

Reconsideration of the above referenced patent application in view of the foregoing amendments and the following remarks is respectfully requested.

Claims 1-47 are now pending in the above referenced patent application. No claims have been amended, cancelled, or added. No new matter has been entered.

## **1. Finality of the Next Action Is Precluded**

Assignee respectfully requests that the PTO confirm the status of claim 35, which was not addressed by the Office Action. Assignee respectfully submits that the PTO's failure to acknowledge claim 35 precludes the finality of a next Office action rejecting that claim, because such a rejection will not have been necessitated by either a claim amendment or based on information from an information disclosure statement. (See MPEP § 706.07(a)).

Assignee notes the absence of an art rejection against claims 26-32 and respectfully submits that a next Office Action rejecting this claim under any section of Title 35 of the United States Code other than 35 U.S.C. § 101 cannot properly be made final because such a rejection will not have been necessitated by a claim amendment or based on information from an information disclosure statement. (See Section 706.07(a) of The Manual of Patent Examining Procedure).

## **2. Objections**

### ***2.1. Drawings: Figures 1-3***

The PTO has objected to the drawings, Figures 1-3, as not being properly labeled as “Prior Art”. Assignee has corrected this error and thanks the Examiner for pointing this out. It is, therefore, respectfully requested that the objection be withdrawn.

### 3. 35 U.S.C. § 101

#### 3.1. Claims 22-32: Non-Statutory Subject Matter

The PTO has rejected claims 22-32 under 35 U.S.C. § 101 because the claimed invention is allegedly directed to non-statutory subject matter. See February 2009 Office Action, page 3, paragraph 2. This rejection by the PTO of these claims is respectfully traversed.

In its October 2008 issued *en banc* majority opinion in *In re Bilski*, the Federal Circuit articulated a “machine-or-transformation” test for patent-eligible subject matter under § 101 of the Patent Act. *Bilski* sets out a disjunctive two-prong “machine-or-transformation” test for patent-eligible subject matter (Slip op. at 10):

A claimed process is surely patent-eligible subject matter under § 101 if:

- (1) it is tied to a particular machine or apparatus, or
- (2) it transforms a particular article into a different state or thing.

Regarding the transformation test, the Federal Circuit implies in *Bilski* that there are two different categories of “electronically-manipulated data,” *id.* at 25, and that the data in each category is a different type of “article” insofar as patent-eligibility is concerned. The data in the first category is an “article” that, if transformed by a method claim, constitutes patent-eligible subject matter, but a method that transforms the data in the second category is not a patent-eligible method.

The first category is comprised of data that represents a “physical object or substance.” *Id.* at 28. For example, citing *In re Abele*, 684 F.2d 902 (C.C.P.A. 1982), the Federal Circuit stated that a method that transforms data that “clearly represent[s] the physical and tangible objects” is a patent-eligible method. Slip. op. at 26.

### 3.1.1. Claims 22-32: Particular Machine or Apparatus

Assignee begins with claim 22. Claim 22 recites:

22. (Original) A method of recovering data from a received data signal, comprising:  
summing a received data signal and at least one scaled feedback signal to generate a soft decision data signal;  
digitizing the soft decision data signal to generate a binary data signal;  
generating a first output signal by clocking the binary data signal into a flip-flop using an extracted clock signal;  
generating a second output signal by clocking the first output signal into a first latch using the extracted clock signal;  
generating a third output signal by clocking the second output signal into a second latch using the extracted clock signal;  
generating the at least one scaled feedback signal by multiplying the first output signal by a first equalization coefficient; and  
generating the extracted clock signal according to the binary data signal, the first output signal, the second output signal and the third output signal.

Assignee respectfully asserts that the apparatus of claim 22 meets the *Bilski* requirements for patentability by, at least, being “tied to a particular machine or apparatus”. It is respectfully noted that claim 22 makes specific use of and is tied to “a flip-flop” (line 5), “a first latch” (line 7), and “a second latch” (line 9), all of which employ the specific “extracted clock signal” (lines 6, 8, and 10). It is respectfully asserted being an apparatus alone is sufficient to satisfy the *Bilski* test for patentability. Support for these particular machines may be found within the specification as originally filed.

Therefore, claim 22 is directed to patentable subject matter. Furthermore, claims 23-32 depend from claim 22 and/or include its limitations. Accordingly, Assignee respectfully submits that claims 23-32 are directed to patentable subject matter and requests withdrawal of the rejection of these claims under 35 U.S.C. § 101.

## 4. 35 U.S.C. § 102

### 4.1. *Moriuchi: Claims 1-3, 7, 9, 10, 22, 23, 33, 34, and 40*

The PTO has rejected claims 1-3, 7, 9, 10, 22, 23, 33, 34, and 40 under 35 U.S.C. § 102 as being anticipated by Moriuchi. This rejection by the PTO of these claims is respectfully traversed.

It is well-established that in order to establish a *prima facie* case of anticipation under § 102 of the patent statute, the PTO must provide a single prior art document that alone has every element and every limitation of the claim being rejected. Therefore, if even a single element or limitation is not met by the asserted document, then the PTO has not succeeded in establishing a *prima facie* case.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Assignee begins with claim 1. Claim 1 recites:

1: (Original) An integrated decision feedback equalizer and clock and data recovery circuit,  
comprising:  
a decision feedback equalizer;  
a clock recovery circuit; and  
a flip-flop that comprises a portion of both the decision feedback equalizer and the clock  
recovery circuit.

It is respectfully asserted that, as just one example of how the text cited by the PTO fails to meet the language of the rejected claims, Moriuchi does not show, teach, use, or describe a

It is respectfully asserted that claim 1 requires a **flip-flop that is part of both the DFE and the clock recovery circuit**. The PTO has asserted that Moriuchi's DFE 34 is the DFE of claim 1, line 3. The PTO has also asserted that Moriuchi's "timing recovery circuit 38" is the "clock recovery circuit" of claim 1, line 4. Finally, the PTO has asserted that Moriuchi's "shift register 44" is the flip-flop of claim 1, line 5.

As can be seen by Moriuchi's Fig. 4 below, the shift register 44 is clearly and wholly within and comprised only of a portion of Moriuchi's DFE 34. Therefore, it is respectively asserted that the **shift register 44 is not partially within or comprised of portions of both** the DFE (Moriuchi's DFE 34) and the clock recovery circuit (Moriuchi's timing recovery circuit 38), as required by claim 1, lines 5 and 6. As such, Moriuchi does not show all the elements of claim 1 and the PTO has not established a *prima facie* case of anticipation under § 102.

**Fig. 4**

The diagram illustrates a 1-bit digital-to-analog converter (DAC) system. The system includes a feedback loop where the output  $a(n)$  is processed by a shift register (44) and a feedback element (FBE, 45) to produce a feedback signal  $b(n)$ . This signal is summed at a summing junction (42) with a reference signal  $Ref$  (71) and a feedforward signal  $y(n)$  from a feedforward element (FFE, 41). The summing junction output is filtered by a loop filter (38) and fed back to an analog-to-digital converter (ADC, 33) and an analog-to-gain controller (AGC, 31). The AGC output (31) is fed back to the input of the ADC. The ADC output (34) is also fed back to the summing junction via the FFE. A trigger signal (35) is used to generate a replica signal (36) which is also fed back to the summing junction. The system is divided into several functional blocks: 15 (AGC), 31 (AGC), 32 (Analog Filter), 33 (ADC), 34 (FFE), 35 (Trigger Signal Generator), 36 (Replica Signal Generator), 37 (VCD, DAC, Loop Filter, TED), 38 (Loop Filter, IDAC, MED), 41 (FFE), 42 (Summing Junction), 43 (Shift Register), 44 (Shift Register), 45 (FBE), 61 (TED), 62 (Loop Filter), 63 (DAC), 64 (VCD), 71 (MED), 72 (IDAC), 73 (Loop Filter).



Without addressing the remarks made in the Office Action with respect to claims 2, 3, 7, 9, 10, 22, 23, 33, 34, and 40, which are not conceded and are believed to be moot, Assignee notes that claims 2, 3, 7, 9, 10, 22, 23, 33, 34, and 40 ultimately depend from claim 1 and include all of its limitations, or include a substantially similar and patentably distinct limitation as claim 1, discussed above. Therefore, these claims patentably distinguish from the cited patents on the same basis as claim 1. It is, therefore, respectfully requested that the PTO withdraw the rejections of these claims.

## 5. 35 U.S.C. § 103

### 5.1. *Moriuchi and Mann: Claims 12 and 14*

The PTO has also rejected claims 12 and 14 under 35 U.S.C. § 103 based upon Moriuchi in combination with Mann. The rejection of these claims is respectfully traversed.

M.P.E.P. § 706.02(j) sets forth the standard for a § 103 rejection:

35 U.S.C. 103 authorizes a rejection where, to meet the claim, it is necessary to modify a single reference or to combine it with one or more other references. After indicating that the rejection is under 35 U.S.C. 103, the examiner should set forth in the Office action:

- (A) the relevant teachings of the prior art relied upon, preferably with reference to the relevant column or page number(s) and line number(s) where appropriate,
- (B) the difference or differences in the claim over the applied reference(s),
- (C) the proposed modification of the applied reference(s) necessary to arrive at the claimed subject matter, and
- (D) an explanation why one of ordinary skill in the art at the time the invention was made would have been motivated to make the proposed modification.

Assignee respectfully asserts that the combination set forth by the PTO fails to meet the requirement for a *prima facie* case for a § 103 rejection for at least the following reasons.

Assignee begins with claim 12. Claim 12 recites:

12. (Original) An integrated decision feedback equalizer and clock and data recovery circuit, comprising:  
a summer coupled to receive an input data signal and at least one scaled feedback signal to generate a soft decision data signal;  
a slicer coupled to receive the soft decision data signal to generate a binary data signal;  
a flip-flop coupled to receive the binary data signal and an extracted clock signal to generate a first output signal;  
a plurality of latches coupled to receive the first output signal to generate second output signals;  
a charge pump coupled to receive at least one phase detector output signal associated with the first output signal and the second output signals;  
a loop filter coupled to receive an output signal from the charge pump;

13 a voltage controlled oscillator coupled to receive an output signal from the loop filter to  
14 generate the extracted clock signal; and  
15 a multiplier coupled to receive the first output signal to generate the at least one scaled  
16 feedback signal.

Assignee respectfully asserts that the combination set forth by the PTO fails to meet the requirement for a *prima facie* case for a § 103(a) rejection for at least the following reasons.

It is respectfully asserted that neither Moriuchi nor Mann, either alone or in combination, suggests or describes either “a summer coupled to receive ... at least one scaled feedback signal” or “a multiplier coupled ... to generate the at least one scaled feedback signal”. The PTO asserts that Moriuchi teaches this limitation. However, it is respectfully asserted that Moriuchi does not teach this limitation.

It is respectfully asserted that the PTO’s suggested circuit from Moriuchi does not route the signals properly as dictated by Assignee’s claim 12. The PTO asserts that the multiplier of claim 12, line 15 is Moriuchi’s “1-bit multiplier” 67 of Fig. 8 which is part of Moriuchi’s “timing error detector (TED) 61” of Figs. 4 and 8. In order to fulfill the limitation of claim 12, lines 15 and 16, the multiplier must “generate the at least one scaled feedback signal”. This feedback signal is received by the “summer” of claim 1, line 3. However, the PTO asserts this summer (line 3) limitation is met by Moriuchi’s adder 42. Which, as can be seen in the previously reproduced Moriuchi Fig. 4, only receives signals from the FFE 41 and the FBE 45 (signal S2), not the PTO’s multiplier (TED 61).

As a result, it is respectfully asserted that there can only be one of two logical conclusions, the “scaled feedback signal” in the PTO’s proposed circuit is either:

- 1) Moriuchi’s TE(n) which is generated by Moriuchi’s TED 61 (the PTO’s multiplier of claim 12, line 15), and  
therefore, Moriuchi’s **adder 42 cannot be the summer of claim 12** as it does not receive the proposed “scaled feedback signal” (Moriuchi’s TE(n)), but instead Moriuchi’s S2; or
- 2) Moriuchi’s S2 which is received by Moriuchi’s adder 42 (the PTO’s summer of claim 12, line 3), and  
therefore, Moriuchi’s TED 61 and its sub-component **multiplier 67 cannot be the multiplier of claim 12** as it does not produce the proposed “scaled feedback signal” (Moriuchi’s S2), but instead Moriuchi’s TE(n).

Therefore, it is respectfully asserted that the PTO’s proposed circuit is logically inconsistent and cannot be made to route the required signals to the required elements. Namely, the “scaled feedback signal” of claim 12, lines 3, 15 and 16 is not routed or connected as claim 12 dictates. Therefore, not all the claim limitations have been met.

The PTO does not assert that Mann ameliorates this deficiency. Therefore, even if the combination were proper, although Assignee believes that it is not, nonetheless, the combination would still fail to produce the invention as recited in the rejected claims. It is, therefore, respectfully requested that the rejection of this claim be withdrawn.

Without addressing the remarks made in the Office Action with respect to claim 14, which are not conceded and are believed to be moot, Assignee notes that claim 14 ultimately depends from claim 12 and includes all of its limitations, or includes a substantially similar and

patentably distinct limitation as claim 12, discussed above. Therefore, the claim patentably

distinguishes from the cited patents on the same basis as claim 12. It is, therefore, respectfully

requested that the PTO withdraw the rejections of these claims.

### ***5.2. Moriuchi, Mann and Cao: Claims 16 and 17***

The PTO has also rejected claims 16 and 17 under 35 U.S.C. § 103 on Moriuchi and Mann in further view Cao. The rejection of these claims is also traversed.

Without addressing the remarks made in the Office Action with respect to these claims, which are not conceded and are believed to be moot, Assignee notes that these claims ultimately depend from claims 1 or 12 and include all of their respective claim's limitations, or include a substantially similar and patentably distinct limitation as claims 1 and/or 12, discussed above. Therefore, these claims patentably distinguish from the cited patents on the same basis as either claims 1 and/or 12. It is, therefore, respectfully requested that the PTO withdraw the rejections of these claims.

### ***5.3. Moriuchi and Cao: Claims 4, 24, and 36***

The PTO has also rejected claims 4, 24, and 36 under 35 U.S.C. § 103 on Moriuchi in further view Cao. The rejection of these claims is also traversed.

Without addressing the remarks made in the Office Action with respect to these claims, which are not conceded and are believed to be moot, Assignee notes that these claims ultimately depend from claims 1 or 12 and include all of their respective claim's limitations, or include a substantially similar and patentably distinct limitation as claims 1 and/or 12, discussed above. Therefore, these claims patentably distinguish from the cited patents on the same basis as either claims 1 and/or 12. It is, therefore, respectfully requested that the PTO withdraw the rejections of these claims.

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***5.4. Moriuchi, Mann and Cao: Claims 5, 6, and 13***

The PTO has also rejected claims 5, 6, and 13 under 35 U.S.C. § 103 on Moriuchi and Mann in further view Cao. The rejection of these claims is also traversed.

Without addressing the remarks made in the Office Action with respect to these claims, which are not conceded and are believed to be moot, Assignee notes that these claims ultimately depend from claims 1 or 12 and include all of their respective claim's limitations, or include a substantially similar and patentably distinct limitation as claims 1 and/or 12, discussed above. Therefore, these claims patentably distinguish from the cited patents on the same basis as either claims 1 and/or 12. It is, therefore, respectfully requested that the PTO withdraw the rejections of these claims.

***5.5. Moriuchi and Shimizu: Claims 11 and 25***

The PTO has also rejected claims 11 and 25 under 35 U.S.C. § 103 on Moriuchi in further view Shimizu. The rejection of these claims is also traversed.

Without addressing the remarks made in the Office Action with respect to these claims, which are not conceded and are believed to be moot, Assignee notes that these claims ultimately depend from claims 1 or 12 and include all of their respective claim's limitations, or include a substantially similar and patentably distinct limitation as claims 1 and/or 12, discussed above. Therefore, these claims patentably distinguish from the cited patents on the same basis as either claims 1 and/or 12. It is, therefore, respectfully requested that the PTO withdraw the rejections of these claims.

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***5.6. Moriuchi, Mann and Cao: Claim 15***

The PTO has also rejected claim 15 under 35 U.S.C. § 103 on Moriuchi and Mann in further view Shimizu. The rejection of these claims is also traversed.

Without addressing the remarks made in the Office Action with respect to this claim, which are not conceded and are believed to be moot, Assignee notes that this claim ultimately depends from claims 1 or 12 and includes all of its respective claim's limitations, or includes a substantially similar and patentably distinct limitation as claims 1 and/or 12, discussed above. Therefore, this claim patentably distinguishes from the cited patents on the same basis as either claims 1 and/or 12. It is, therefore, respectfully requested that the PTO withdraw the rejections of these claims.

***5.7. Moriuchi, Mann, Shimizu and Cao: Claim 18***

The PTO has also rejected claims 18 under 35 U.S.C. § 103 on Moriuchi and Mann, Shimizu in further view Cao. The rejection of these claims is also traversed.

Without addressing the remarks made in the Office Action with respect to this claim, which are not conceded and are believed to be moot, Assignee notes that this claim ultimately depends from claims 1 or 12 and includes all of its respective claim's limitations, or includes a substantially similar and patentably distinct limitation as claims 1 and/or 12, discussed above. Therefore, this claim patentably distinguishes from the cited patents on the same basis as either claims 1 and/or 12. It is, therefore, respectfully requested that the PTO withdraw the rejections of these claims.



## **CONCLUSION**

In view of the foregoing, it is respectfully asserted that all claims pending in this application, as amended, are in condition for allowance. If the Examiner has any questions, they are invited to contact the undersigned at 202-470-6450. Reconsideration of this patent application and early allowance of all claims is respectfully requested.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 50-3521.

Respectfully submitted,

Friday, June 26, 2009

Dated

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